

What Is Claimed

1. A composition for lubricating metallic work pieces comprising:

(a) an oil having a viscosity of about 75 cSt to about 160 cSt at 25°C;

(b) free sulfur in an amount sufficient to provide lubrication, and

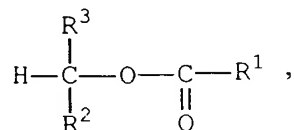
(c) a metal corrosion inhibitor to prevent corrosion of said work pieces;

wherein said lubrication is demonstrated by a Falex reference load of greater than about 4,500 pounds force and by a Falex reference wear of less than ten teeth.

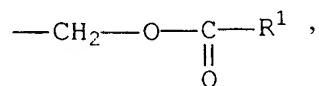
2. The composition of Claim 1, wherein said composition is a metalworking composition.

3. The composition of Claim 1, wherein said metal corrosion inhibitor is a fatty oil selected from the group consisting of a glyceride, an ester of a carboxylic acid, and combinations thereof,

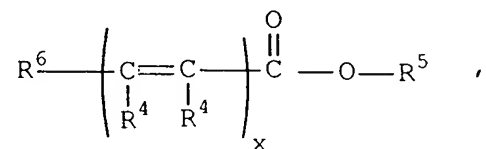
wherein said glyceride is represented by the formula of



wherein R¹ is a saturated or unsaturated C₃ to C₂₄ aliphatic hydrocarbon, and R² or R³ is hydrogen or

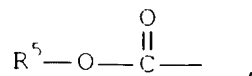


wherein R¹ is as defined above, and said ester is represented by the formula of



wherein R⁴ is hydrogen or a saturated or unsaturated C₃ to C₁₂ aliphatic hydrocarbon, X is 1, 2 or 3, R⁵ is a saturated or

unsaturated C₃ to C₁₄ aliphatic hydrocarbon, and R⁶ is represented by the formula of



wherein R⁵ is as defined above.

4. The composition of Claim 3, wherein said fatty oil is about 5 to about 30 volume percent based on said composition.

5. The composition of Claim 1, wherein said sulfur is present in amounts of from about 0.4 to about 12 percent by weight of said composition.

6. The composition of Claim 1, wherein said composition when maintained at 100°C for 2 hours has a copper strip corrosion classification from about 1a to about 3b.

9. The composition of Claim 1, wherein said composition has a Four-Ball wear scar diameter of less than about 0.07 mm.

10. The composition of Claim 1, wherein the metallic work pieces are nonferrous metallic work pieces.

11. A composition for lubricating nonferrous metallic work pieces comprising:

(a) an oil having a viscosity suitable for heavy duty metalworking operations; and

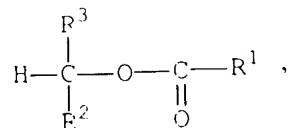
(b) free sulfur being present in amounts of about 0.4 percent to about 12 percent by weight of said composition;

wherein said composition does not corrode said nonferrous work pieces.

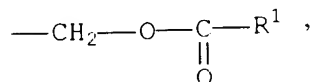
12. The composition of Claim 11, wherein said sulfur is not chemically bound to molecules in said oil.

13. The composition of Claim 11, wherein said composition when maintained at 100°C for 2 hours has a copper strip corrosion classification of about 1a to about 2a.

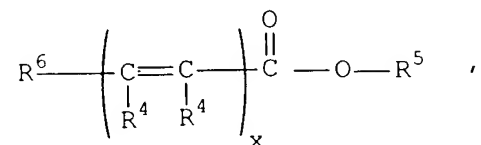
14. The composition of Claim 11, further comprising a fatty oil selected from the group consisting of a glyceride, an ester of a carboxylic acid, and combinations thereof, wherein said glyceride is represented by the formula of



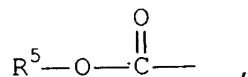
where R^1 is a saturated or unsaturated C_3 to C_{24} aliphatic hydrocarbon, and R^2 or R^3 is hydrogen or



wherein R^1 is as defined above, and said ester is represented by the formula of



wherein R^4 is hydrogen or a saturated or unsaturated C_3 to C_{12} aliphatic hydrocarbon, x is 1, 2 or 3, R^5 is a saturated or unsaturated C_3 to C_{24} aliphatic hydrocarbon, and R^6 is represented by the formula of



wherein R^5 is as defined above, said fatty oil being present in an amount of about 5 to 30 volume percent based on the total composition and said fatty oil.

15. The composition of Claim 11, wherein said composition has a Falex reference wear of less than ten teeth.

16. The composition of Claim 11, wherein said composition has a Falex reference load of greater than about 4,500 pounds force.

17. The composition of Claim 11, wherein said composition has a Four-Ball wear scar diameter of less than about 0.07 mm.

18. The composition of Claim 11, wherein said composition has a viscosity of about 75 cSt to about 160 cSt at 25°C.

19. The composition of Claim 11, further comprising from about 0.0 to 4.0 weight percent chemically bound sulfur.

20. A method of making a composition which provides non-corrosive lubrication to nonferrous metalworking processes comprising:

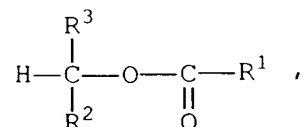
selecting a base oil having a viscosity of about 75 cSt to about 160 cSt at 25°C;

incorporating chemically unbound sulfur to said base oil to provide an extreme pressure lubricant, wherein the chemically unbound sulfur is incorporated in an amount from about 0.4 to about 12 weight percent of said composition; and

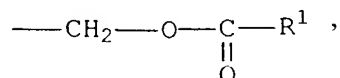
further incorporating a fatty oil to inhibit nonferrous metal corrosion.

21. The method of Claim 20, wherein said composition has a Falex reference wear of less than ten teeth.

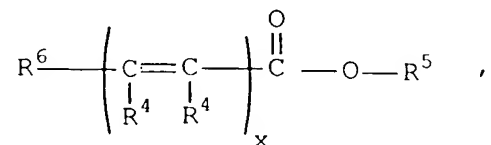
22. The method of Claim 20, wherein said fatty oil is selected from the group consisting of a glyceride, an ester of a carboxylic acid, and combinations thereof, wherein said glyceride is represented by the formula of



wherein R¹ is a saturated or unsaturated C₃ to C₂₄ aliphatic hydrocarbon and R² or R³ is hydrogen or

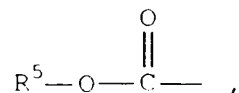


wherein R¹ is as defined above, and said ester is represented by the formula of



wherein R⁴ is hydrogen or a saturated or unsaturated C₃ to C₁₂ aliphatic hydrocarbon, X is 1, 2 or 3, R⁵ is a saturated or

unsaturated C₃ to C₄ aliphatic hydrocarbon, and R⁶ is represented by the formula of



wherein R⁵ is as defined above, and is combined into said composition in an amount from about 5 to about 30 volume percent based on the total composition and said fatty oil.

23. The method of Claim 20, further comprising incorporating from about 0.0 to 4.0 weight percent chemically bound sulfur.

24. A method of providing noncorrosive lubrication to the metalworking of a nonferrous metal part comprising:

providing a composition which includes a base oil having a viscosity of about 75 cSt to about 160 cSt at 25°C and free sulfur present in amounts sufficient to provide extreme pressure lubrication of a Falex reference load of greater than about 4,500 pounds force; and

applying said composition to the metal work part and/or a metal work tool during the metalworking process.